WHAT IS CLAIMED IS:

1.   An adaptive value generating apparatus for generating an adaptive value for controlling an object under a predetermined control condition, comprising:

a statistical processing device for executing a statistical process when a set of an input value and an output value and a function including at least one parameter are designated, thereby determining a value of the parameter so that a calculation value of the function corresponding to the input value comes close to the output value and generating an approximation expression; and

an adapting device for determining an approximation function for estimating a state of the object, outputting information designating the determined approximation function to the statistical processing device, outputting a measurement value, which is obtained by measuring the state of the object under the predetermined control condition, as the output value and the predetermined control condition as the input value to the statistical processing device, evaluating precision of the approximation expression on the basis of the calculation value and the measurement value when the approximation expression is received from the statistical processing device, and generating the adaptive value by using the approximation expression in the case where an error is within a predetermined range.

2.   The adaptive value generating apparatus according to claim 1, further comprising:

a presenting device for presenting information to a user, thereby prompting an input; and

an input device for outputting an output signal according to operation of the user,

wherein the adapting device makes the presenting device present information which helps the user to designate the approximation function, and determines the approximation function on the basis of the output signal.

3.   The adaptive value generating apparatus according to claim 2, wherein the adapting device stores a plurality of approximation functions and the information which helps the user to designate the approximation function is information indicative of the plurality of approximation functions.

4.   The adaptive value generating apparatus according to claim 1, wherein the statistical processing device derives an optimum point by using the approximation expression in accordance with a designated optimization method and outputs the optimum point to the adapting device, and

the adapting device outputs information to designate the optimization method to the statistical processing device and settles the optimum point obtained from the statistical processing device as the adaptive value.

5.   The adaptive value generating apparatus according to claim 4, wherein the adapting device outputs the information to

designate the optimization method to the statistical processing device, determines whether the optimum point obtained from the statistical processing device satisfies a predetermined condition or not on the basis of a measurement value obtained by measuring the object and, when the predetermined condition is satisfied, settles the optimum point as the adaptive value.

6.   The adaptive value generating apparatus according to claim 4, wherein the adapting device generates the information to designate the optimization method according to the approximation function.

7.   The adaptive value generating apparatus according to claim 4, further comprising:

a presenting device for presenting information to a user, thereby prompting an input; and

an input device for outputting an output signal according to operation of the user,

wherein the adapting device pre-stores kinds of optimization methods which can be used by the statistical processing device, makes the presenting device present information indicative of the kinds of the optimization methods, and generates the information to designate the optimization method on the basis of the output signal.

8.   The adaptive value generating apparatus according to any one of claims 1 to 7, wherein the object is an engine used for

a vehicle, and the predetermined control condition is an operating condition of the engine.

9.   An adaptive procedure control program for generating an adaptive value for controlling an object under a predetermined control condition by using a statistical processing tool which makes a computer execute a statistical process,

wherein when a set of an input value and an output value and a function including at least one parameter are designated, the statistical processing tool determines the value of the parameter so that a calculation value of the function to the input value comes close to the output value, and generates an approximation expression in the computer, and

the adaptive procedure control program makes the computer execute the steps of:

determining an approximation function for estimating a state of the object;

outputting information to designate the determined approximation function to the statistical processing tool;

outputting a measurement value, which is obtained by measuring the state of the object under the predetermined control condition, as the output value, and the predetermined control condition as the input value to the statistical processing tool;

evaluating precision of the approximation expression on the basis of the calculation value and the measurement value; and,

generating the adaptive value by using the approximation

expression when an error is within a predetermined range.

10.   An adaptive value generating program for generating an adaptive value for controlling an object under a predetermined control condition, which makes a computer execute the steps of:

determining an approximation function which includes at least one parameter and estimates a state of the object;

inputting the predetermined control condition to the approximation function and obtaining a calculation value;

determining the parameter so that the calculation value comes close to a measurement value obtained by measuring the state of the object under the predetermined control condition, thereby generating an approximation expression; and

evaluating precision of the approximation expression on the basis of the calculation value and the measurement value and, when an error is within a predetermined range, generating the adaptive value by using the approximation expression.

11.   An adaptive value generating program for making a computer, having an input device for outputting an output signal according to an operation of a user, generate an adaptive value for controlling an object under a predetermined control condition,

wherein the adaptive value generating program includes a statistical processing tool and an adaptive procedure control program for making the computer function as a device for executing a statistical process in accordance with an instruction and outputting a result of the process, and

the adaptive procedure control program includes:

a plurality of tool control modules for making the computer function as a device for inputting the instruction to the statistical processing tool and also receiving the result of the process;

a plurality of processing modules for making the computer function as a device for executing a predetermined process;

a procedure generating module for making the computer function as a device for selecting modules from the tool control modules and the processing modules on the basis of the output signal, and generating an execution procedure file to specify an executing order of the selected modules; and

an execution module for making the computer function as a device for detecting execution of the execution procedure file on the basis of the output signal, executing a process in accordance with a procedure written in the execution procedure file, and generating the adaptive value.

12. The adaptive value generating program according to claim 11, wherein the computer has a display device, and

at least one of the plurality of processing modules, as the predetermined process, makes the display device display an input screen for prompting the user to input a predetermined instruction, receives the predetermined instruction on the basis of the output signal, and generates the instruction to be given to at least one of the tool control modules on the basis of the predetermined instruction.

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13.   The adaptive value generating program according to claim 11, wherein the computer can transmit a measurement instruction to a measuring apparatus for measuring a state of the object and receive a measurement result, and

at least one of the plurality of processing modules, as the predetermined process, generates the measurement instruction, transmits the measurement instruction to the measuring apparatus, and receives the measurement result from the measuring apparatus.